Transport of the Western Adriatic Current

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From September 2002 to May of 2003 as a part of a joint research program (JRP), the U.S. Naval Research Laboratory and the NATO Undersea Research Centre deployed fourteen upward looking, bottom mounted Acoustic Doppler Current Meters (ADCP) in the northern Adriatic Sea. Four of these were deployed near Senigallia, Italy across the path of the Western Adriatic Current (WAC). Two additional moorings equipped with Aanderaa current meters (RCM 7 and 9) were deployed by the Istituto di Scienze Marine-Ancona on either side of these four JRP moorings. The volume transport of the WAC out of the northern Adriatic was calculated from the section (oriented at 48°T) formed by these moorings. The mean transport through the section from 22 September through 05 April was 0.15 Sv. Tides significantly modulate the transport of the WAC and were thus removed for the transport calculation. Tidal transports peaked at approximately ±0.15 Sv during spring tides (reversing the typical flow) and ±0.05 Sv during neap tides. The non-tidal transport time series is punctuated by numerous "events" of strong transport, each associated with a bora or sirocco wind event as modeled by the LAMI wind model. Events that produced non-tidal transports exceeding 0.3 Sv were the bora of September 23-24, December 7-10, January 6-12, January 25-26, February 1, February 12-19, and April 3-5, and the sirocco of November 16-19, and November 25-26. The highest observed non-tidal transport of 0.51 Sv occurred during the sirocco of November 16. Excluding the peaks, the typical transport from September through December decreased from values near 0.15 Sv to values near 0.05 Sv. After December, the typical non-event transport remained relatively constant near 0.05 Sv. Non-tidal flow opposed to the WAC was always very weak (mean of −0.002 Sv) in the 25 km ADCP portion of the section.

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